

CONTENTS OF VOLUME 29

Volume 29, No. 1, 1997

Editorial	1
Clinical Sciences	
Clinical Investigations	
Assessment of metabolic response and functional changes after anterior cruciate ligament surgery <i>Fienate Petschnig and Ramon Baron</i>	3
Inhibition of histamine release by nedocromil sodium reduces exercise-induced hypoxemia in master athletes <i>Christian Préfaut, F. Anselme-Poujol, and C. Caillaud</i>	10
Clinically Relevant	
Effect of a high or a low fat diet on cardiovascular risk factors in male and female runners <i>John Leddy, Peter Horvath, Jill Rowland, and David Pendergast</i>	17
Theoretical Study	
The influence of baseball modulus and mass on head and chest impacts: a theoretical study <i>John Joseph Crisco, Shonn Phillip Hendee, and Richard Mark Greenwald</i>	26
Basic Sciences	
Symposium: Exercise, Brain, and Behavior	
Chair: Rod K. Dishman	
Introduction: exercise, brain, and behavior <i>Rod K. Dishman</i>	37
Simulated weightlessness to induce chronic hypoactivity of brain norepinephrine for exercise and stress studies <i>Mark Sothman and G. K. Castello</i>	39
Possible mechanisms of central nervous system fatigue during exercise <i>J. Mark Davis and Stephen P. Bailey</i>	45
Effects of acute physical exercise on central serotonergic systems <i>Francis Chaouloff</i>	58
Brain monoamines, exercise, and behavioral stress: animal models <i>Rod K. Dishman</i>	63
Original Investigations	
Age and cardiac output during cycle exercise in thermoneutral and warm environments <i>Christopher T. Minson and W. Larry Kenney</i>	75
Epidemiology	
Ethnic and age trends for body composition in women residing in the U.S. Southwest: I. regional fat <i>Katherine Thomas Thomas, Colleen S. Keller, and Keith E. Holbert</i>	82
Ethnic and age trends for body composition in women residing in the U.S. Southwest: II. total fat <i>Katherine Thomas Thomas, Colleen S. Keller, and Keith E. Holbert</i>	90
Family size and age at menarche in athletes <i>Robert M. Malina, Peter T. Katzmarzyk, Christine M. Bonci, Randa C. Ryan, and Rita E. Wellens</i>	99
Applied Sciences	
Biodynamics	
Greater cross education following training with muscle lengthening than shortening <i>Tibor Hortobágyi, Jeffrey P. Hill, and Nancy J. Lambert</i>	107
Responses to exercise at the velocity associated with $\dot{V}O_{2max}$ <i>David W. Hill and Amy L. Rowell</i>	113
Psychobiology and Social Sciences	
Effects of oral and intravenous rehydration on ratings of perceived exertion and thirst <i>Deborah Riebe, Carl M. Maresh, Lawrence E. Armstrong, Robert W. Kenefick, John W. Castellani, Marcos E. Echegaray, Bernard A. Clark, and David N. Camaione</i>	117
Physical Fitness and Performance	
Monitoring high-intensity endurance exercise with heart rate and thresholds <i>Marcel R. Boulay, Jean-Aimé Simoneau, Gilles Lortie, and Claude Bouchard</i>	125
Special Communications	
Methods	
Cross validation of the 1-mile walking test for men with mental retardation <i>Pauli Rintala, Jeffrey A. McCubbin, Steve B. Downs, and Susan D. Fox</i>	133
Validation of an instrument for measurement of physical activity in youth <i>Anne T. Weston, Richard Petosa, and Russell R. Pate</i>	138

CONTENTS OF VOLUME 29

Volume 29, No. 1, 1997

Editorial	1
Clinical Sciences	
Clinical Investigations	
Assessment of metabolic response and functional changes after anterior cruciate ligament surgery <i>Fienate Petschnig and Ramon Baron</i>	3
Inhibition of histamine release by nedocromil sodium reduces exercise-induced hypoxemia in master athletes <i>Christian Préfaut, F. Anselme-Poujol, and C. Caillaud</i>	10
Clinically Relevant	
Effect of a high or a low fat diet on cardiovascular risk factors in male and female runners <i>John Leddy, Peter Horvath, Jill Rowland, and David Pendergast</i>	17
Theoretical Study	
The influence of baseball modulus and mass on head and chest impacts: a theoretical study <i>John Joseph Crisco, Shonn Phillip Hendee, and Richard Mark Greenwald</i>	26
Basic Sciences	
Symposium: Exercise, Brain, and Behavior	
Chair: Rod K. Dishman	
Introduction: exercise, brain, and behavior <i>Rod K. Dishman</i>	37
Simulated weightlessness to induce chronic hypoactivity of brain norepinephrine for exercise and stress studies <i>Mark Sothman and G. K. Castello</i>	39
Possible mechanisms of central nervous system fatigue during exercise <i>J. Mark Davis and Stephen P. Bailey</i>	45
Effects of acute physical exercise on central serotonergic systems <i>Francis Chaouloff</i>	58
Brain monoamines, exercise, and behavioral stress: animal models <i>Rod K. Dishman</i>	63
Original Investigations	
Age and cardiac output during cycle exercise in thermoneutral and warm environments <i>Christopher T. Minson and W. Larry Kenney</i>	75
Epidemiology	
Ethnic and age trends for body composition in women residing in the U.S. Southwest: I. regional fat <i>Katherine Thomas Thomas, Colleen S. Keller, and Keith E. Holbert</i>	82
Ethnic and age trends for body composition in women residing in the U.S. Southwest: II. total fat <i>Katherine Thomas Thomas, Colleen S. Keller, and Keith E. Holbert</i>	90
Family size and age at menarche in athletes <i>Robert M. Malina, Peter T. Katzmarzyk, Christine M. Bonci, Randa C. Ryan, and Rita E. Wellens</i>	99
Applied Sciences	
Biodynamics	
Greater cross education following training with muscle lengthening than shortening <i>Tibor Hortobágyi, Jeffrey P. Hill, and Nancy J. Lambert</i>	107
Responses to exercise at the velocity associated with $\dot{V}O_{2max}$ <i>David W. Hill and Amy L. Rowell</i>	113
Psychobiology and Social Sciences	
Effects of oral and intravenous rehydration on ratings of perceived exertion and thirst <i>Deborah Riebe, Carl M. Maresh, Lawrence E. Armstrong, Robert W. Kenefick, John W. Castellani, Marcos E. Echegaray, Bernard A. Clark, and David N. Camaione</i>	117
Physical Fitness and Performance	
Monitoring high-intensity endurance exercise with heart rate and thresholds <i>Marcel R. Boulay, Jean-Aimé Simoneau, Gilles Lortie, and Claude Bouchard</i>	125
Special Communications	
Methods	
Cross validation of the 1-mile walking test for men with mental retardation <i>Pauli Rintala, Jeffrey A. McCubbin, Steve B. Downs, and Susan D. Fox</i>	133
Validation of an instrument for measurement of physical activity in youth <i>Anne T. Weston, Richard Petosa, and Russell R. Pate</i>	138

Simultaneous monitoring of heart rate and motion to assess energy expenditure <i>Amy Luke, Kevin C. Maki, Nanette Barkey, Richard Cooper, and Daniel McGee</i>	144
Review	
Blood pressure measurement during exercise: a review <i>Sharon E. Griffin, Robert A. Robergs, and Vivian H. Heyward</i>	149
Book Reviews	160
1996 Reviewers	164
Information for Authors	i
 Volume 29, No. 2, 1997	
Clinical Sciences	
Clinically Relevant	
Effects of long-term training on the progression of chronic renal failure in rats <i>Cássia T. Bergamaschi, Mirian A. Boim, Luis A. Moura, Ivan C. Piçarro, and Nestor Schor</i>	169
Skeletal muscle function and body composition of patients with hyperthyroidism <i>Antonio Claudio Lucas Da Nóbrega, Mário Vaisman, and Claudio Gil Soares de Araújo</i>	175
Allometric scaling of left ventricular mass by body dimensions in males and females <i>Alan M. Batterham, Keith P. George, and David R. Mullineaux</i>	181
Basic Sciences	
Symposium: Physiological effects of bed rest and restricted physical activity: an update	
Group Writing Chair: Victor A. Convertino	
An overview of the issues: physiological effects of bed rest and restricted physical activity <i>Victor A. Convertino, Susan A. Bloomfield, and John E. Greenleaf</i>	187
Cardiovascular consequences of bed rest: effect on maximal oxygen uptake <i>Victor A. Convertino</i>	191
Changes in musculoskeletal structure and function with prolonged bed rest <i>Susan A. Bloomfield</i>	197
Intensive exercise training during bed rest attenuates deconditioning <i>John E. Greenleaf</i>	207
Original Investigations	
Effect of oral creatine supplementation on muscle (Pcr) and short-term maximum power output <i>L. Maureen Odland, J. Duncan MacDougall, Mark A. Tarnopolsky, A. Elorriaga, and Anne Borgmann</i>	216
Muscle glycogen storage following prolonged exercise: effect of timing of ingestion of high glycemic index food <i>Jo Ann M. Parkin, Michael F. Carey, Iva K. Martin, Lillian Stojanovska, and Mark A. Febbraio</i>	220
Epidemiology	
Prediction of adult stature and noninvasive assessment of biological maturation <i>Gaston P. Beunen, Robert M. Malina, Johan Lefevre, Albrecht L. Claessens, Roland Renson, and Jan Simons</i>	225
Applied Sciences	
Biodynamics	
3-D biomechanical analysis of sprint hurdles at different competitive levels <i>Aki Salo, Paul N. Grimshaw, and Leith Marar</i>	231
Physical Fitness and Performance	
Skeletal muscle adaptations to training under normobaric hypoxic versus normoxic conditions <i>Lori Melissa, J. Duncan MacDougall, Mark A. Tarnopolsky, Nick Cipriano, and Howard J. Green</i>	238
Could women outrun men in ultramarathon races? <i>Jenefer Bam, Tomothy D. Noakes, June Juritz, and Steven C. Dennis</i>	244
Hemoglobin/myoglobin desaturation during speed skating <i>Kenneth W. Rundell, Shoko Nioka, and Britton Chance</i>	248
Metabolic determinants of the age-related improvement in one-mile run/walk performance in youth <i>Kirk J. Cureton, Mark A. Sloniger, Donna M. Black, William P. McCormack, and David A. Rowe</i>	259
Special Communications	
Methods	
Prediction of $\dot{V}O_{2peak}$ from submaximal cycle ergometry using 50 versus 80 rpm <i>David P. Swain and Reuben L. Wright</i>	268
Applicability of $\dot{V}O_{2max}$ criteria: discontinuous versus continuous protocols <i>Glen E. Duncan, Edward T. Howley, and Bradley N. Johnson</i>	273

Technical note

- Skating technique for the straights, based on the optimization of a simulation model
Todd L. Allinger and Anton J. Van Den Bogert 279

Book Reviews 287

Volume 29, No. 3, 1997

Editorial 289

Clinical Sciences

Clinical Investigations

- Exercise and bone mineral density in mature female athletes
Jan E. Dook, C. James, N. K. Henderson, and R. I. Price 291
- Left ventricular function during exercise testing and training
Carl Foster, Rami A. Gal, Patrick Murphy, Steven C. Port, and Donald H. Schmidt 297
- Interval training in patients with severe chronic heart failure: analysis and recommendations for exercise procedures
Katharina Meyer, Ladislaus Samek, Matthias Schwaibold, Samuel Westbrook, Ramiz Hajric, Ralph Beneke, Manfred Lehmann, and Helmut Roskamm 306

Clinically Relevant

- Rat tendon morphologic and functional changes resulting from soft tissue mobilization
Craig J. Davidson, Larry R. Ganion, Gale M. Gehlsen, Beth Verhoestra, Janet E. Roepke, and Thomas L. Sevier 313

Basic Sciences

Original Investigations

- Facial cooling-induced bradycardia: attenuating effect of central command at exercise onset
Jimmy C. Smith, Daniel P. Stephens, Patricia K. Winchester, and Jon W. Williamson 320
- The effect of ultrasound on collagen synthesis and fibroblast proliferation *in vitro*
Alejandro Ramirez, James A. Schwane, Carol McFarland, and Barry Starcher 326
- Influence of the level of dietary lipid intake and maximal exercise on the immune status in runners
Jaya T. Venkatraman, Jill A. Rowland, Ernesto Denardin, Peter J. Horvath, and David Pendergast 333
- Effect of exhaustive exercise stress on the cytokine response
Christof Weinstock, Daniel König, Regine Harnischmacher, Joseph Keul, Aloys Berg, and Hinnak Northoff 345
- Dietary red pepper ingestion increases carbohydrate oxidation at rest and during exercise in runners
Kiwon Lim, Mayumi Yoshioka, Shinobu Kikuzato, Akira Kiyonaga, Hiroaki Tanaka, Munehiro Shindo, and Masashige Suzuki 355

Epidemiology

- Fat distribution, physical activity, and cardiovascular risk factors
Gary R. Hunter, Tamas Kekes-Szabo, Scott W. Snyder, Christal Nicholson, Ildiko Nyikos, and Lincoln Berland 362

Applied Sciences

Biodynamics

- Optimization of walking in children
Suh-Fang Jeng, Hua-Fang Liao, Jin-Shin Lai, and Jia-Woei Hou 370
- Metabolic efficiency during arm and leg exercise at the same relative intensities
Jie Kang, Robert J. Robertson, Fredric L. Goss, Sergio G. Dasilva, Richard R. Suminski, Alan C. Utter, Robert F. Zoeller, and Kenneth F. Metz 377
- Reliability of variables in the kinematic analysis of sprint hurdles
Aki Salo, Paul N. Grimshaw, and Jukka T. Viitasalo 383

Physical Fitness and Performance

- Metabolic profile of high intensity intermittent exercises
Izumi Tabata, Kouichi Irisawa, Motoki Kouzaki, Kouji Nishimura, Futoshi Ogita, and Motohiko Miyachi 390
- Lactate exchange and removal abilities in rowing performance
Laurent Messonnier, Hubert Freund, Muriel Bourdin, Alain Belli, and Jean-Rene Lacour 396

Special Communications

Methods

- Detection of ventilatory threshold using near infrared spectroscopy in men and women
Yagesh N. Bhambhani, Shelley M. Buckley, and Toshio Susaki 402
- Heart rate reserve is equivalent to % $\dot{V}O_2$ Reserve, not to % $\dot{V}O_{2max}$
David P. Swain and Brian C. Leutholtz 410

Non-exercise $\dot{V}O_{2\max}$ estimation for physically active college students James D. George, William J. Stone, and Lee N. Burkett	415
Book Reviews	424

Volume 29, No. 4, 1997

Clinical Sciences

Case Study

Rehabilitation following redo revascularization and repaired sternotomy Stacey Adams Dramiga and Bernard J. Rubal	427
--	-----

Clinical Investigation

Wingate test performance in children with asthma: aerobic or anaerobic limitation? François-Pierre Counil, Alain Varray, Chantal Karila, Maurice Hayot, Michel Voisin, and Christian Préfaut	430
---	-----

Clinically Relevant

Acute effects of treadmill running on lipoprotein(a) levels in males and females Lyle Hubinger, Laurel Traeger Mackinnon, Lee Barber, Jane McCosker, Alf Howard, and Frank Lepre	436
Gymnastic training and bone density in pre-adolescent females Kerry Dyson, Cameron J. R. Blimkie, K. Shawn Davison, Colin E. Webber, and Jonathan D. Adachi	443
Plasma catecholamine and lactate relationship during graded exercise in men with spinal cord injury Georgia C. Frey, Jeffrey A. McCubbin, John M. Dunn, and Robert S. Mazzeo	451

Basic Sciences

Original Investigations

Eccentric exercise augments the cardiovascular response to static exercise Mary P. Miles, Yihua Li, John P. Rinard, Priscilla M. Clarkson, and Jon W. Williamson	457
Lymphocyte subpopulation expression in women: effect of exercise and circadian rhythm E. B. Zelazowska, A. Singh, R. B. Raybourne, E. M. Sternberg, P. W. Gold, and P. A. Deuster	467
Dietary L-glutamine does not improve lymphocyte metabolism or function in exercise-trained rats Leann D. Shewchuk, Vickie E. Baracos, and Catherine J. Field	474
Upper limit for intestinal absorption of a dilute glucose solution in men at rest Stanley M. Duchman, Alan J. Ryan, Harold P. Schedl, Robert W. Summers, Timothy L. Bleiler, and Carl V. Gisolfi	482
Effects of creatine loading and training on running performance and biochemical properties of rat skeletal muscle Tobin A. Brannon, Gregory R. Adams, Cory L. Conniff, and Kenneth M. Baldwin	489
Gas exchange and neurohumoral response to exercise: influence of the exercise protocol Lars Gullestad, Jonathan Myers, Reidar Bjørnerheim, Knut J. Berg, Ole Djoseland, Christian Hall, Karin Lund, John Kjekshus, and Svein Simonsen	496
Double product response is accelerated above the blood lactate threshold Hiroaki Tanaka, Akira Kiyonaga, Yasunori Terao, Kojiro Ide, Miyoko Yamauchi, Mamoru Tanaka, and Munehiro Shindo	503
Reduced ischemia and reperfusion injury following exercise training Joseph R. Libonati, John P. Gaughan, Colleen A. Hefner, Andrew Gow, Albert M. Paolone, and Steven R. Houser	509

Epidemiology

Quantitation of lower physical activity in persons with multiple sclerosis Alexander V. Ng and Jane A. Kent-Braun	517
--	-----

Applied Sciences

Biodynamics

Bioimpedance analysis: evaluation of leg-to-leg system based on pressure contact foot-pad electrodes Christopher Nuñez, Dymna Gallagher, Marjolein Visser, F. Xavier Pi-Sunyer, Zimian Wang, and Steven B. Heymsfield	524
EMG analysis of lower extremity muscle recruitment patterns during an unloaded squat Jerome A. Isear, Jr., Jeff C. Erickson, and Teddy W. Worrell	532
Prediction of human gait parameters from temporal measures of foot-ground contact Gregory A. Breit and Robert T. Whalen	540
Muscle activity in wedge, parallel, and giant slalom skiing Robert A. Hintermeister, Dennis D. O'Connor, Gregory W. Lange, Charles J. Dillman, and J. Richard Steadman	548

Physical Fitness and Performance

Reliability of a 1-h endurance performance test in trained female cyclists David Bishop	554
--	-----

Special Communications

Methods

Body composition by DEXA in older adults: accuracy and influence of scan mode

Jody L. Clasey, Mark L. Hartman, Jill Kanaley, Laurie Wideman, C. David Teates, Claude Bouchard, and Arthur Weltman.....

560

Book Reviews

568

Corrigenda

569

Volume 29, No. 5, 1997

1996 J. B. Wolfe Memorial Lecture

Challenging beliefs: *ex Africa semper aliquid novi*

Timothy David Noakes 571

Response to the Challenge

Maximal oxygen uptake: "classical" versus "contemporary" viewpoints

David R. Bassett, Jr. and Edward T. Howley 591

Clinical Sciences

Clinical Investigation

Effect of a rhinovirus-caused upper respiratory illness on pulmonary function test and exercise responses

Thomas G. Weidner, Beth N. Anderson, Leonard A. Kaminsky, Elliott C. Dick, and Terry Schurr 604

Clinically Relevant

Failure of manual massage to alter limb blood flow: measures by Doppler ultrasound

J. Kevin Shoemaker, Peter M. Tiidus, and Richelle Mader 610

Exposure to anabolic-androgenic steroids shortens life span of male mice

Franklin H. Bronson and Curt M. Matherne 615

Basic Sciences

Symposium: Metabolic adaptations to endurance training: recent advances

Chair: Andrew R. Coggan

Plasma glucose metabolism during exercise: effect of endurance training in humans

Andrew R. Coggan 620

Training enhanced hepatic gluconeogenesis: the importance for glucose homeostasis during exercise

Casey M. Donovan and Ken D. Sumida 628

Effect of endurance training on fatty acid metabolism during whole body exercise

Wade H. Martin, III 635

Effect of endurance training on fatty acid metabolism: local adaptations

Bente Kiens 640

Effect of endurance training on ammonia and amino acid metabolism in humans

Terry E. Graham, Lauraine P. Turcotte, Bente Kiens, and Erik A. Richter 646

Original Investigations

Lactate distribution in the blood during progressive exercise

Edith W. Smith, Michele S. Skelton, Duann E. Kremer, David D. Pascoe, and L. Bruce Gladden 654

Aldosterone and vasopressin responses in the heat: hydration level and exercise intensity effects

Scott J. Montain, Janet E. Laird, William A. Latzka, and Michael N. Sawka 661

Exercise training decreases the growth hormone (GH) response to acute constant-load exercise

Arthur Weltman, Judy Y. Weltman, Christopher J. Womack, Shala E. Davis, Jeffrey L. Blumer, Glenn A. Gaesser, and Mark L. Hartman 669

Applied Sciences

Biodynamics

Interpreting the relation between force and cross-sectional area in human muscle

Stuart A. Bruce, Suzanne K. Phillips, and Roger C. Woledge 677

Effects of steady-state versus stochastic exercise on subsequent cycling performance

Garry S. Palmer, Timothy D. Noakes, and John A. Hawley 684

Psychobiology and Social Sciences

Effects of training volume on sleep, psychological, and selected physiological profiles of elite female swimmers

Sheila R. Taylor, Geoffrey G. Rogers, and Helen S. Driver 688

Physical Fitness and Performance

Effect of 4 wk of deep water run training on running performance

Barbara A. Bushman, Michael G. Flynn, Fredrick F. Andres, Charles P. Lambert, Michael S. Taylor, and William A. Braun 694

Special Communications

Methods

- Comparison of methods for evaluating exercise-induced changes in thromboxane B₂ and β -thromboglobulin
M. Kent Todd, Allen H. Goldfarb, and Cathy Burleson 700
- Assessing body composition before and after resistance or endurance training
Craig E. Broeder, Keith A. Burrhus, Lars S. Svanevik, Joseph Volpe, and Jack H. Wilmore 705
- Normalizing strength for body size differences in older adults
Michael J. Davies and Gail P. Dalsky 713

International Abstracts..... 718

Book Reviews..... 722

ACSM Position Stand: The Female Athlete Triad..... i

Volume 29, No. 6, 1997

Clinical Sciences

Clinical Investigation

- Effect of acute bicarbonate administration on exercise responses of COPD patients
Remco Coppoolse, Thomas J. Barstow, William W. Stringer, Eve Carithers, and Richard Casaburi 725

Clinically Relevant

- Impact of age and gender on peak oxygen uptake in chronic heart failure
Karel Pardaens, Johan Vanhaecke, and Robert H. Fagard 733

Basic Sciences

Review

- Diaphragm structure and function in health and disease
David C. Poole, William L. Sexton, Gaspar A. Farkas, Scott K. Powers, and Michael B. Reid 738

Original Investigations

- Thermoregulatory responses to cycling with and without a helmet
Melinda Sheffield-Moore, Kevin R. Short, Chadwick G. Kerr, Allen C. Parcell, Douglas R. Bolster, and David L. Costill 755
- Heart rate performance curve during incremental cycle ergometer exercise in healthy young male subjects
Peter Hofmann, Rochus Pokan, Serge P. Von Duvillard, Franz J. Seibert, Robert Zweiker, and Peter Schmid 762
- β 1-adrenoreceptors regulate resting metabolic rate
Linda S. Lamont, Rochelle A. Romito, Robert S. Finkelhor, and Satish C. Kalhan 769
- Oxygen consumption of cycle ergometry is nonlinearly related to work rate and pedal rate
Ben R. Londeree, Julia Moffitt-Gerstenberger, James A. Padfield, and Diane Lottmann 775

Epidemiology

- Predictive accuracy of bioimpedance in estimating fat-free mass of African-American women
Barbara E. Ainsworth, Lisa M. Stolarczyk, Vivian H. Heyward, Carolyn B. Berry, Melinda L. Irwin, and Laura M. Mussulman 781
- Physical activity, sports participation, and risk factors in adolescents
Colin A. Boreham, Jos Twisk, Maurice J. Savage, Gordon W. Cran, and John J. Strain 788

Applied Sciences

Biodynamics

- Mechanical characteristics of knee extension exercises performed on an isokinetic dynamometer
John W. Chow, Warren G. Darling, and James G. Hay 794
- Low back loads over a variety of abdominal exercises: searching for the safest abdominal challenge
Craig T. Axler and Stuart M. McGill 804

Physical Fitness and Performance

- Physical fitness as a determinant of vagal modulation
Rochelle L. Goldsmith, J. Thomas Bigger, Jr., Daniel M. Bloomfield, and Richard C. Steinman 812
- Influence of different racing positions on metabolic cost in elite cyclists
Peter Gnehm, Stephan Reichenbach, Ekkehardt Altpeter, Hans Widmer, and Hans Hoppeler 818
- Cardiovascular responses to submaximal exercise in 7- to 9-yr-old boys and girls
Kenneth R. Turley and Jack H. Wilmore 824

Special Communications

Methods

- Ramp and constant power trials produce equivalent critical power estimates
R. Hugh Morton, Simon Green, David Bishop, and David G. Jenkins 833

Statistics	
Effect of training on lactate/ventilatory thresholds: a meta-analysis <i>Ben R. Londeree</i>	837
Book Reviews	844
Corrigenda	846
Corrigendum	847
 Supplement to Volume 29, No. 6, 1997	
Preface	S3
Foreword	S4
Introduction	S5
 Section I. Physical Activity Questionnaires used in the General Population	
The Aerobics Center Longitudinal Study Physical Activity Questionnaire	S10
Baecke Questionnaire of Habitual Physical Activity	S15
Bouchard Three-Day Physical Activity Record	S19
CARDIA Physical Activity History	S25
Framingham Physical Activity Index	S33
Godin Leisure-Time Exercise Questionnaire	S36
Health Insurance Plan of New York (HIP) Activity Questionnaire	S39
Historical Leisure Activity Questionnaire	S43
The Physical Activity Questionnaires of the Kuopio Ischemic Heart Disease Study (KIHD)	S46
KIHD Seven-Day Physical Activity Recall	S47
KIHD 12-month Leisure-Time Physical Activity History	S50
KIHD 24-Hour Total Physical Activity Record	S53
KIHD Occupational Physical Activity Interview	S56
Lipid Research Clinics Questionnaire	S59
Minnesota Leisure-Time Physical Activity Questionnaire	S62
Modifiable Activity Questionnaire	S73
Modifiable Activity Questionnaire for Adolescents	S79
Paffenbarger Physical Activity Questionnaire	S83
Seven-Day Physical Activity Recall	S89
Stanford Usual Activity Questionnaire	S104
Tecumseh Occupational Physical Activity Questionnaire	S107
 Section II. Physical Activity Questionnaires for Older Adults	
Modified Baecke Questionnaire for Older Adults	S117
Physical Activity Scale for the Elderly	S122
YALE Physical Activity Survey	S130
Zutphen Physical Activity Questionnaire	S141
 Section III. Physical Activity Questionnaires Used in Major Population-Based Surveys	
Behavioral Risk Factor Surveillance System	S146
Canada Fitness Survey	S153
The MONICA Optional Study of Physical Activity (MOSPA)	S162
National Children and Youth Fitness Study I and II	S170
National Health Interview Survey	S190
National Health and Nutrition Examination Survey I, II, and III	S196
Youth Risk Behavior Survey	S201

Volume 29, No. 7, 1997

Editorial	849
Clinical Sciences	
Case Study	
Orbital emphysema as a complication of bungee jumping <i>Ralf Krott, Holger Mietz, and Günter K. Kriegstein</i>	850
Clinical Investigation	
Gait adaptations before and after anterior cruciate ligament reconstruction surgery <i>Paul Devita, Tibor Hortobagyi, Jason Barrier, Michael Torry, Kathryn L. Glover, David L. Speroni, Jeffrey Money, and Matthew T. Mahar</i>	853
Basic Sciences	
Original Investigations	
Altered expression of myosin heavy chain in human skeletal muscle in chronic heart failure <i>Martin J. Sullivan, Brian D. Duscha, Henrik Klitgaard, William E. Kraus, Frederick R. Cobb, and Bengt Saltin</i>	860
Relationship between aerobic power, blood volume, and thermoregulatory responses to exercise-heat stress <i>Tetsuya Yoshida, Kei Nagashima, Hiroshi Nose, Takashi Kawabata, Seichi Nakai, Akira Yorimoto, and Taketoshi Morimoto</i>	867
Blood flow, lipid oxidation, and muscle glycogen synthesis after glycogen depletion by strenuous exercise <i>Juha A. Tuominen, Juha E. Peltonen, and Veikko A. Koivisto</i>	874
Compartmental shifts of calcium and magnesium as a result of swimming and swimming training in rats <i>Francisco J. Navas, J. Francisco Martin, and Alfredo Cordova</i>	882
Upright exercise or supine lower body negative pressure exercise maintains exercise responses after bed rest <i>Stuart M. C. Lee, Barbara S. Bennett, Alan R. Hargens, Donald E. Watenpugh, Richard E. Ballard, Gita Murthy, Steve R. Ford, and Suzanne M. Fortney</i>	892
Epidemiology	
Physical activity and incidence of coronary heart disease in middle-aged women and men <i>Aaron R. Folsom, Donna K. Arnett, Richard G. Hutchinson, Fangzi Liao, Limin X. Clegg, and Lawton S. Cooper</i>	901
Associations among physical activity, television watching, and obesity in adult Pima Indians <i>Shannon J. Fitzgerald, Andrea M. Kriska, Mark A. Pereira, and Max P. De Courten</i>	910
Applied Sciences	
Biodynamics	
Jump distance of dance landings influencing internal joint forces: I. axial forces <i>Kathy J. Simpson and Lisa Kanter</i>	916
Jump distance of dance landings influencing internal joint forces: II. shear forces <i>Kathy J. Simpson and Michael Pettit</i>	928
Physical Fitness and Performance	
Cardiorespiratory response to exercise in elite Sherpa climbers transferred to sea level <i>Eduardo Garrido, Gil Rodas, Casimiro Javierre, Ramon Segura, Assumpcio Estruch, and Josep L. Ventura</i>	937
Improved running performance in hot humid conditions following whole body precooling <i>John Booth, Frank Marino, and Jeffrey J. Ward</i>	943
Energy expenditure of swimmers during high volume training <i>Todd A. Trappe, Amalia Gastaldelli, Alison C. Jozsi, John P. Troup, and Robert R. Wolfe</i>	950
Wet bulb globe temperature index and performance in competitive distance runners <i>Daniel J. McCann and William C. Adams</i>	955
Special Communications	
Methods	
Validity of bioelectrical impedance equations for estimating fat-free weight in high school female gymnasts <i>Joan M. Eckerson, Tammy K. Evetovich, Jeffrey R. Stout, Terry J. Housh, Glen O. Johnson, Dona J. Housh, Kyle T. Ebersole, and Douglas B. Smith</i>	962
Predictive accuracy of BIA equations for estimating fat-free mass of black men <i>Dale R. Wagner, Vivian H. Heyward, Paula S. Kocina, Lisa M. Stolarczyk, and Wendy L. Wilson</i>	969
Book Reviews	975
Information for Authors	i

Supplement to Volume 29, No. 7, 1997

Were you knocked out? a team physician's approach to initial concussion management <i>Paul R. McCrory</i>	S207
--	------

Alternative approaches to the assessment of mild head injury in athletes <i>Kevin M. Guskiewicz, Bryan L. Riemann, David H. Perrin, and Lewis M. Nashner</i>	S213
The disc at risk in athletes: perspectives on operative and nonoperative care <i>Jeffrey L. Young, Joel M. Press, and Stanley A. Herring</i>	S222
Stingers, transient quadriplegia, and cervical spinal stenosis: return to play criteria <i>Robert C. Cantu</i>	S233
The diagnosis and treatment of cervical radiculopathy <i>Gerard A. Malanga</i>	S236
The biomechanics of cervical spine injury and implications for injury prevention <i>Beth A. Winkelstein and Barry S. Myers</i>	S246
Suggested management options for participation in collision activities with congenital, developmental, or postinjury lesions involving the cervical spine <i>Joseph S. Torg and Julie A. Ramsey-Emrhein</i>	S256

Volume 29, No. 8, 1997

Clinical Sciences

Clinical Investigation

Compliance to exercise therapy in older participants with knee osteoarthritis: implications for treating disability <i>W. Jack Rejeski, Lawrence R. Brawley, Walter Ettinger, Timothy Morgan, and Christopher Thompson</i>	977
---	-----

Clinically Relevant

Exercise training, postprandial hypertriglyceridemia, and LDL subfraction distribution <i>George G. Zogas, Tom R. Thomas, and William S. Harris</i>	986
Chromium and exercise training: effect on obese women <i>Kristen E. Grant, Resa M. Chandler, Arthur L. Castle, and John L. Ivy</i>	992
Naturally occurring muscle pain during exercise: assessment and experimental evidence <i>Dane B. Cook, Patrick J. O'Connor, Steven A. Eubanks, Jerome C. Smith, and Ming Lee</i>	999

Basic Sciences

Original Investigations

Accentuated antagonism in canine subendocardium is not altered by chronic exercise <i>Mary Hamra and Robert S. McNeil</i>	1013
Temporal inhomogeneity in brachial artery blood flow during forearm exercise <i>Robert A. Robergs, Milton V. Icenogle, Tracee L. Hudson, and Ernest R. Greene</i>	1021
Exercise mode and gender comparisons of energy expenditure at self-selected intensities <i>Len Kravitz, Robert A. Robergs, Vivian H. Heyward, Dale R. Wagner, and Kevin Powers</i>	1028
The effect of exercise intensity on lipid peroxidation <i>David A. Leaf, Michael T. Kleinman, Michelle Hamilton, and Thomas J. Barstow</i>	1036
Left ventricular function in response to the transition from aerobic to anaerobic metabolism <i>Rochus Pokan, Peter Hofmann, Serge P. Von Duvillard, Friedrich Beaufort, Martin Schumacher, Fritz M. Fruhwald, Robert Zweiker, Bernd Robert Gasser, Dieter Brandt, Gerhard Smekal, Werner Klein, and Peter Schmid</i>	1040
Lactate and the effects of exercise on testosterone secretion: evidence for the involvement of a cAMP-mediated mechanism <i>Shin-Shan Lu, Chin-Pang Lau, Yuh-Fan Tung, Seng-Wong Huang, Yen-Hao Chen, Hsi-Chang Shih, Shioh-Chwen Tsai, Chien-Chen Lu, Shyi-Wu Wang, Jing-Jong Chen, Eillen Jea Chien, Chau-Heng Chien, and Paulus S. Wang</i>	1048

Epidemiology

Associations between physical activity and risk factors for coronary heart disease: The Cardiovascular Risk in Young Finns Study <i>Olli T. Raitakari, Simo Taimela, Kimmo V. K. Porkka, Risto Telama, Ilkka Välimäki, Hans K. Åkerblom, and Jorma S. A. Viikari</i>	1055
Familial determinants of moderate and intense physical activity: a twin study <i>Diane S. Lauderdale, Richard Fabsitz, Joanne M. Meyer, Phyllis Sholinsky, Viswanathan Ramakrishnan, and Jack Goldberg</i>	1062

Applied Sciences

Biodynamics

Impact shock and attenuation during in-line skating <i>Andrew T. Mahar, Timothy R. Derrick, Joseph Hamill, and Graham E. Caldwell</i>	1069
--	------

Psychobiology and Social Sciences

Effects of exercise on appetite control: implications for energy balance <i>Neil Anthony King, Angelo Tremblay, and John Edward Blundell</i>	1076
---	------

Physical Fitness and Performance

- Physiological profiles of elite off-road and road cyclists
Randall L. Wilber, Katherine M. Zawadzki, Jay T. Kearney, Michael P. Shannon, and Denise Disalvo 1090
- Automated $\dot{V}O_{2\max}$ calibrator for open-circuit indirect calorimetry systems
Christopher J. Gore, Peter G. Catcheside, Stephen N. French, John M. Bennett, and Joe Laforgia 1095

Special Communications

Methods

- A model for optimizing cycling performance by varying power on hills and in wind
David P. Swain 1104
- The reproducibility of the Bruce protocol exercise test for the determination of aerobic capacity in older women
Roger A. Fielding, Walter R. Frontera, Virginia A. Hughes, Elizabeth C. Fisher, and W. J. Evans 1109

Volume 29, No. 9, 1997

Clinical Sciences

Clinical Investigations

- Fatigue characteristics following ankle fractures
David G. Behm and Diane M. M. St.-Pierre 1115
- Birth weight and physical ability in 5- to 8-yr-old healthy children born prematurely
Bareket Falk, Alon Eliakim, Raffy Dotan, Dario G. Liebermann, Rivka Regev, and Oded Bar-Or 1124

Clinically Relevant

- Prospective screening of 5,615 high school athletes for risk of sudden cardiac death
Colin M. Fuller, Candace M. McNulty, Donald A. Spring, Kosta M. Arger, Stephen S. Bruce, Basil E. Chrysos, Eric M. Drummer, Frank P. Kelley, Michael J. Newmark, and Gerald H. Whipple 1131

Basic Sciences

Original Investigations

- Effect of endurance training on postexercise parathyroid hormone levels in elderly men
E. Zerath, X. Holy, P. Douce, C. Y. Guezennec, and J. C. Chatard 1139
- Cardiac responses to maximal upright cycle exercise in healthy boys and men
Thomas Rowland, Barbara Popowski, and Lisa Ferrone 1146
- Changes in $\dot{V}O_{2\max}$, physical activity, and body fat with chronic exercise: effects on plasma lipids
David Alexander Leaf, David L. Parker, and Doug Schaad 1152
- Effects of estradiol on substrate turnover during exercise in amenorrheic females
Brent C. Ruby, Robert A. Robergs, Debra L. Waters, Mark Burge, Cristine Mermier, and Lisa Stolarczyk 1160
- Effects of cross-training on markers of insulin resistance/hyperinsulinemia
M. Brian Wallace, Brett D. Mills, and Carol L. Browning 1170
- In vivo* cell-mediated immunity and vaccination response following prolonged, intense exercise
Helle Bruunsgaard, Andreas Hartkopp, Thomas Mohr, Helle Konradsen, Iver Heron, Carl H. Mordhorst, and Bente K. Pedersen 1176
- Pre-exercise branched-chain amino acid administration increases endurance performance in rats
Patrick Calders, Jean-Louis Pannier, Dirk M. Matthys, and Eric M. Lacroix 1182

Epidemiology

- Physical fitness, lipids, and apolipoproteins in the Northern Ireland Health and Activity Survey
Domhnall MacAuley, Evelyn E. McCrum, Gillian Stott, Alun E. Evans, Ellie Duly, Tom R. Trinick, Kevin Sweeney, and Colin A. G. Boreham 1187
- Intensity, duration, and frequency of physical activity and coronary risk factors
Gert B. M. Mensink, Désirée W. Heerstrass, Sabine E. Neppelenbroek, Albertine J. Schuit, and Bärbel-Maria Bellach 1192
- Relationship between leisure-time physical activity and selected dietary variables in the Worcester Area Trial for Counseling in Hyperlipidemia
Charles E. Matthews, James R. Hebert, Ira S. Ockene, Gordon Saperia, and Phillip A. Merriam 1199

Applied Sciences

Biodynamics

- Anticipatory postural adjustments before load pickup in a bi-manual whole body lifting task
Huib M. Toussaint, Dianne A. C. M. Commissaris, Marco J. M. Hoozemans, Michiel J. Ober, and Peter J. Beek 1208
- Anticipatory postural adjustments in the back and leg lift
Huib M. Toussaint, Dianne A. C. M. Commissaris, and Peter J. Beek 1216
- Effect of cycling experience, aerobic power, and power output on preferred and most economical cycling cadences
Anthony P. Marsh and Philip E. Martin 1225

Physical Fitness and Performance

- Training adaptation and biological changes among well-trained male triathletes
David G. Rowbottom, David Keast, Peter Garcia-Webb, and Alan R. Morton 1233
- Effects of ambient temperature on the capacity to perform prolonged cycle exercise in man
Stuart D. R. Galloway and Ronald J. Maughan 1240
- Energy cost of stair climbing and descending on the college alumnus questionnaire
David R. Bassett, John A. Vachon, Aristotle O. Kirkland, Edward T. Howley, Glen E. Duncan, and Kelly R. Johnson 1250

Special Communications

Methods

- Daily energy expenditure of women by factorial and heart rate methods
G. B. Spurr, Dama L. Dufour, Julio C. Reina, and Tanya A. Haught 1255
- Measuring energy costs of leisure activity in adolescents using a CO₂ breath test
Craig A. Horswill, William B. Zipf, and C. Lawrence Kien 1263
- New electrode system for rapid whole-body and segmental bioimpedance assessment
Yan Xiu Tan, Christopher Nuñez, Yungao Sun, Kuan Zhang, Zimian Wang, and Steven B. Heymsfield 1269

Letter to the Editor

- Metabolic profile of high intensity intermittent exercises
Paul G. Gastin 1274
- Response
Izumi Tabata 1275

- Book Reviews 1277

Volume 29, No. 10, 1997

Clinical Sciences

Clinical Investigations

- Predictive validity of an injury score among high school basketball players
Nathaniel Grubbs, Russell T. Nelson, and William D. Bandy 1279
- Improved walking economy in patients with peripheral arterial occlusive disease
Christopher J. Womack, Debra J. Sieminski, Leslie I. Katzell, Alberto Yataco, and Andrew W. Gardner 1286
- Lower extremity alignment and risk of overuse injuries in runners
Dennis Y. Wen, James C. Puffer, and Thomas P. Schmalzried 1291

Clinically Relevant

- Cardiovascular response to sudden strenuous exercise: an exercise echocardiographic study
Roseann M. Chesler, Donald W. Michielli, Michelle Aron, and Richard A. Stein 1299

Basic Sciences

Original Investigations

- Arterial morphology and blood volumes of rats following 10–14 weeks of tail suspension
Herbert G. Chew, Jr. and Steven S. Segal 1304
- Muscle-specific creatine kinase gene polymorphism and VO_{2max} in the HERITAGE Family Study
Miguel A. Rivera, France T. Dionne, Jean-Aimé Simoneau, Louis Pérusse, Monique Chagnon, Yvon Chagnon, Jacques Gagnon, Arthur S. Leon, D. C. Rao, James S. Skinner, Jack H. Wilmore, and Claude Bouchard 1311
- Carbohydrate affects natural killer cell redistribution but not activity after running
David C. Nieman, Dru A. Henson, E. Brindley Garner, Diane E. Butterworth, Beverly J. Warren, Alan Utter, J. Mark Davis, Omar R. Fagoaga, and Sandra L. Nehlsen-Cannarella 1318
- Effect of casting on forearm resistance vessels in young men
Daniel J. Green, J. Gerry O'Driscoll, Brian A. Blanksby, and Roger R. Taylor 1325
- Blood lactate and perceived exertion relative to ventilatory threshold: boys versus men
Anthony D. Mahon, Glen E. Duncan, Cheryl A. Howe, and Pedro Del Corral 1332
- Exercise effect on canine and miniswine cardiac catecholamines and enkephalins
Barbara A. Barron, M. Harold Laughlin, and Patricia A. Gwartz 1338

Epidemiology

- Measuring general levels of physical activity: preliminary evidence for the Physical Activity Questionnaire for Older Children
Peter R. E. Crocker, D. A. Bailey, Robert A. Faulkner, Kent C. Kowalski, and Robert McGrath 1344
- Lifetime exercise and disk degeneration: an MRI study of monozygotic twins
Tapio Videman, Michele C. Battié, Laura E. Gibbons, Hannu Manninen, Kevin Gill, Lloyd D. Fisher, and Markku Koskenvuo 1350
- Aerobic capacity and cognitive performance in a cross-sectional aging study
Martin P. J. Van Bortel, Fred G. W. C. Paas, Peter J. Houx, Jos J. Adam, Joep C. Teeken, and Jellemer Jolles 1357

Applied Sciences

Biodynamics

- Ballistic movement performance in karate athletes
E. Paul Zehr, Digby G. Sale, and James J. Dowling 1366

Physical Fitness and Performance

- Water running with and without a flotation vest in competitive and recreational runners
Margaret M. Gehring, Betsy A. Keller, and Barbara A. Brehm 1374
- Acute effects of ski waxing on pulmonary function
Martin D. Hoffman, Philip S. Clifford, and Basil Varkey 1379

Special Communications

Methods

- Reproducibility of ballistic movement
E. Paul Zehr and Digby G. Sale 1383
- Swimmers' compliance with training prescription
Andrew M. Stewart and William G. Hopkins 1389

Book Reviews 1393

Volume 29, No. 11, 1997

Clinical Sciences

Clinical Investigation

- Altered loading patterns and femoral bone mineral density in children with unilateral Legg-Calvé-Perthes disease
Donald A. Bailey, Robert A. Faulkner, Katherine Kimber, Anne Dzus, and Ken Yong-Hing 1395

Clinically Relevant

- Influence of sports discipline on shoulder rotator cuff balance
Philippe Codine, Pierre Louis Bernard, Michel Pocholle, Charles Benaim, and Vincent Brun 1400
- Anterior cruciate ligament reconstruction and joint dynamics during stair climbing
David L. Kowalk, Jeffrey A. Duncan, Frank C. McCue III, and Christopher L. Vaughan 1406

Symposium: Lipids and lipoproteins in diet and exercise

- Introduction
Serge P. von Duvillard 1414
- The poloxamer 407-induced hyperlipidemic atherogenic animal model
Warren K. Palmer, Eugene E. Emeson, and Thomas P. Johnston 1416
- Regulation of plasma lipoprotein levels by dietary triglycerides enriched with different fatty acids
Robert J. Nicolosi and Eugene J. Rogers 1422
- Effects of physical activity and diet on lipoprotein(a)
Laurel T. Mackinnon, Lyle Hubinger, and Frank Lepre 1429
- The swine as a model for studying exercise-induced changes in lipid metabolism
Gale B. Carey 1437

Basic Sciences

Original Investigations

- Muscle-specific creatine kinase gene polymorphisms in elite endurance athletes and sedentary controls
Miguel A. Rivera, France T. Dionne, Bernd Wolfarth, Monique Chagnon, Jean-Aimé Simoneau, Louis Pérusse, Marcel R. Boulay, Jacques Gagnon, Thomas M. K. Song, Joseph Keul, and Claude Bouchard 1444
- Absence of linkage between $\dot{V}O_{2\max}$ and its response to training with markers spanning chromosome 22
Jacques Gagnon, My-Anh Ho-Kim, Yvon C. Chagnon, Louis Pérusse, France T. Dionne, Arthur S. Leon, D. C. Rao, James S. Skinner, Jack H. Wilmore, and Claude Bouchard 1448
- Time course of enhanced endothelium-mediated dilation in aorta of trained rats
Michael D. Delp and M. Harold Laughlin 1454
- Resistance exercise prevents plantar flexor deconditioning during bed rest
Marcas M. Bamman, Gary R. Hunter, Bruce R. Stevens, Mark E. Williams, and Michael C. Greenisen 1462
- Effect of alterations in blood volume on cardiac function during maximal exercise
Bruce Krip, Norman Gledhill, Veronica Jamnik, and Darren Warburton 1469
- Water budget during ultra-endurance exercise
Geoffrey Rogers, Carmel Goodman, and Clifford Rosen 1477
- Autonomic differences between athletes and nonathletes: spectral analysis approach
Kunsoo Shin, Haruyuki Minamitani, Shohei Onishi, Hajime Yamazaki, and Myoung-ho Lee 1482

Applied Sciences

Biodynamics

- Technique and energy losses in front crawl swimming
Monique A. M. Berger, A. Peter Hollander, and Gert De Groot 1491

Physical Fitness and Performance

- Effect of training on repeatability of cardiopulmonary exercise performance in normal men and women
Roland Bingisser, Vladimir Kaplan, Thomas Scherer, Erich W. Russi, and Konrad E. Bloch 1499

Special Communications

Methods

- Inertial-load method determines maximal cycling power in a single exercise bout
James C. Martin, Bruce M. Wagner, and Edward F. Coyle 1505
- Comparison and cross-validation of cycle ergometry estimates of $\dot{V}O_{2\max}$
Park A. Lockwood, James E. Yoder, and Patricia A. Deuster 1513
- Comparison of free range and graded exercise testing
Carl Foster, Robert B. Coyle, Amy Crowe, Maurice Dumit, Stacey Lettau, Heidi M. Teske, and Paul Volkert 1521
- Body composition by x-ray absorptiometry and bioelectrical impedance in female runners
Claude Pichard, Ursula G. Kyle, Gerald Gremion, Margaret Gerbase, and Daniel O. Slosman 1527
- Relationships between TriTrac-R3D vectors, heart rate, and self-report in obese children
Karen J. Coleman, Brian E. Saelens, Margo D. Wiedrich-Smith, Jeremy D. Finn, and Leonard H. Epstein 1535

International Abstracts

Book Reviews

Volume 29, No. 12, 1997

Clinical Sciences

Clinically Relevant

- Relationship between training frequency and subcutaneous and visceral fat in women
Takashi Abe, Yasuo Kawakami, Masaaki Sugita, and Tetsuo Fukunaga 1549
- Highland mountain hiking and coronary artery disease exercise tolerance and effects on left ventricular function
mountain hiking and CAD
Martin Huonker, Arno Schmidt-Trucksch, Stephan Sorichter, Manfred Imer, Helga Dürr, Manfred Lehmann, and Joseph Keul 1554
- Sagittal plane translations of the knee in anterior cruciate deficient subjects and controls
Anil Vergis, Misha Hindriks, and Jan Gillquist 1561
- Injuries to elite rowers over a 10-yr period
Gregory J. Hickey, Peter A. Fricker and Warren A. McDonald 1567

BASIC SCIENCES

Original Investigations

- Myosin phenotype and bioenergetic characteristics of rat respiratory muscles
Scott K. Powers, Haydar A. Demirel, Jeff S. Coombes, Louise Fletcher, Corinne Calliaud, Iannis Vrabas, and David Prezant 1573
- Exercise-induced changes in enzymatic O-methylation of catecholestrogens by erythrocytes of eumenorrheic women
Carl De Créé, Gerrit Van Kranenburg, Peter Geurten, Yoshiyuki Fujimura, and Hans A. Keizer 1580
- Exercise responses after altitude acclimatization are retained during reintroduction to altitude
Beth A. Beidleman, Stephen R. Muza, Paul B. Rock, Charles S. Fulco, Timothy P. Lyons, Reed W. Hoyt, and Allen Cymerman 1588
- Effect of exercise on milk immunoglobulin A
Richard L. Gregory, Janet P. Wallace, Linda E. Gfell, Jennifer Marks, and Barry A. King 1596

EPIDEMIOLOGY

- Body mass scaling of peak oxygen uptake in 20- to 79-yr-old adults
Daniel P. Heil 1602

APPLIED SCIENCES

Biodynamics

- Menstrual cycle phase and running economy
Tracy J. Williams and Gary S. Krahenbuhl 1609
- Viscoelastic characteristics of muscle: passive stretching versus muscular contractions
Dean C. Taylor, Daniel E. Brooks, and John B. Ryan 1619

Metabolic and biomechanical variables of two incline conditions during distance running <i>R. Matthew Klein, Jeffrey A. Potteiger, and Carole J. Zebas</i>	1625
Physical Fitness and Performance	
Influence of a β_2 -agonist on physical performance at low temperature in elite athletes <i>Kjell Larsson, Désirée Gavhed, Lars Larsson, Ingvar Holmér, Lennart Jorfelt, and Peter Ohlsén</i>	1631
Hormonal, immunological and hematological responses to intensified training in elite swimmers <i>Laurel Traeger Mackinnon, Sue L. Hooper, Simone Jones, Richard D. Gordon, and Anthony W. Bachmann</i>	1637
Muscular adaptation and strength during the early phase of eccentric training: influence of the training frequency <i>Stephan Sorichter, Johannes Mair, Arnold Koller, Peter Secnik, Vojtech Parrak, Christian Haid, Erich Müller, and Bernd Puschendorf</i>	1646
Energy expenditure of a noncontact boxing training session compared with submaximal treadmill running <i>Brett Bellinger, Alan St. Clair Gibson, Andre Oelofse, Rudi Oelofse, and Mike Lambert</i>	1653
SPECIAL COMMUNICATIONS	
Methods	
Bioimpedance spectroscopy technique: intra-, extracellular, and total body water <i>Lawrence E. Armstrong, Robert W. Kenefick, John W. Castellani, Deborah Riebe, Stavros A. Kavouras, James T. Kuznicki, and Carl M. Maresh</i>	1657
Assessment of the mechanical properties of area-elastic sport surfaces with video analysis <i>Jos J. De Koning, Benno M. Nigg, and Karin G. M. Gerritsen</i>	1664
LETTERS TO THE EDITOR	1669
BOOK REVIEWS	1672
ADA/ACSM Diabetes Mellitus and Exercise Joint Position Paper	i
Author Index, Volume 29	vii
Key Word Index, Volume 29	xvii
Contents to Volume 29	xxxii